Limerick Quadrangle, Maine

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DEPARTMENT OF CONSERVATION
MAINE

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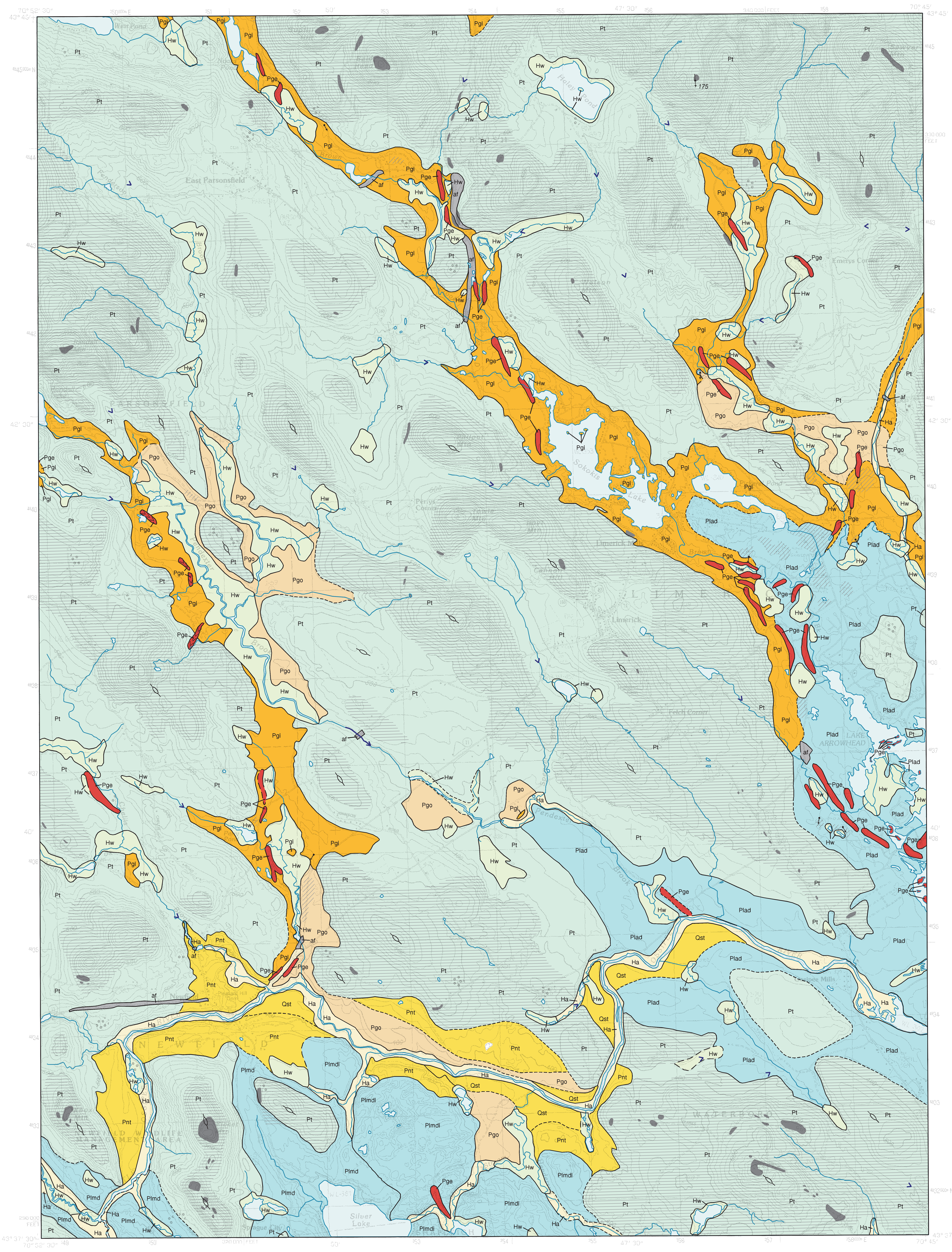
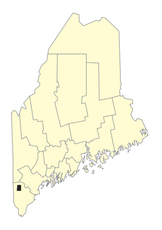
For additional information, see Open-File Report 99-120.

Surficial Geology



SOURCES OF INFORMATION

Surficial geologic mapping by Thom Wilch completed during the 1992 field season; funding for this work provided by the U. S. Geological Survey COGEOMAP program. Geologic unit designations and contacts revised and matched to adjacent quadrangles in 1999 by MGS geologists.



Quadrangle Location

SCALE 1 : 24,000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey Limerick quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

Ha — **Alluvium** - Fine to coarse sand and gravel deposited on flood plains of rivers and brooks. Most alluvium deposits are associated with the Little Ossipee River. Alluvium deposits often interfinger with wetland deposits.

Hw — **Wetland** - Peat, muck, silt, and sand. Poorly drained areas, often with standing water present. Vegetation ranges from variable tree cover to dominant freshwater grasses. Swamps and marshes not differentiated.

Qst, Pgo, Pnt — **Stream terrace** - Well-sorted, stratified sand and gravel deposited by glacial meltwater and postglacial streams occurs as terraces in valleys. The Newfield terrace (Pnt), outwash (Pgo), and postglacial stream terraces (Qst) record three stages of base-level lowering in the Little Ossipee River drainage.

Plad, Plmdi, Plmd — **Glaciolacustrine delta** - Gravel and very well sorted sand deposited in temporary glacial lakes. Flat-lying delta deposits near Newfield (Plmd) are associated with Glacial Lake Mousam; delta deposits near Limerick Mills and Ossipee Mills (Plad) are associated with Glacial Lake Arrowhead. Hummocky delta deposits near Newfield (Plmdi) are associated with ice-contact collapse at the head of Glacial Lake Mousam.

Pgi — **Ice-contact deposit** - Variably sorted sand and gravel deposited in contact with glacial ice. Deposits often exhibit collapse structures. Includes areas of hummocky topography and terraces.

Pge — **Esker** - Elongate ridge of stratified sand and gravel deposited in subglacial meltwater tunnel. Chevrons mark crest of esker and point in direction of glacial meltwater flow.

Pt — **Till** - Very poorly sorted, weakly to non-stratified diamicton composed of boulder to pebble-size clasts in a silty to sandy matrix. Includes both a loose ablation till and indurated lodgement till.

Thin drift areas - Surficial deposits, mainly till, that have thicknesses generally less than 10 feet (3 m). These areas often have abundant rock outcrops.

Bedrock - Exposed rock outcrops. Gray dots and patches delineate individual outcrops.

af — **Artificial fill** - Original topography and deposits obscured by artificially deposited till, sand and gravel, rock, or refuse. Includes landfill and construction sites.

Gravel pit - Active or inactive pit, generally in sand and gravel. Original topography of these areas has been obscured by pit operation.

Contact - Indicates boundary between adjacent map units, dashed where inferred.

Meltwater channel - Channel eroded by glacial meltwater stream. Arrow indicates probable flow direction.

Boulder field - Area of many large boulders.

Kettle - Depression created by melting of glacial ice.

135 — **Glacial striation or groove** - Arrow shows direction of former ice movement. Dot marks point of observation.

Meltwater flow direction - Arrow indicates direction of meltwater flow inferred from dip of cross-bedding or clast imbrication. Tip of arrow marks point of observation.

Streamlined hill - Glacially streamlined till or bedrock hill that has been elongated in direction of ice flow.

Note: Map units are presented in a general stratigraphic order from youngest to oldest. The unit abbreviations generally include a capitalized one-letter prefix to designate the age of the deposit: P = Pleistocene; Q = Quaternary; H = Holocene (postglacial).

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

1. Wilch, T., 1999, Surficial geology of the Limerick 7.5-minute quadrangle, York County, Maine: Maine Geological Survey, Open-File Report 99-120, 7 p.
2. Wilch, T., 1998, Surficial materials of the Limerick quadrangle, Maine: Maine Geological Survey, Open-File Map 98-170.
3. Neil, C. D., 1998, Significant sand and gravel aquifers of the Limerick quadrangle, Maine: Maine Geological Survey, Open-File Map 98-136.
4. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)
5. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.
6. Thompson, W. B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, *in* Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.